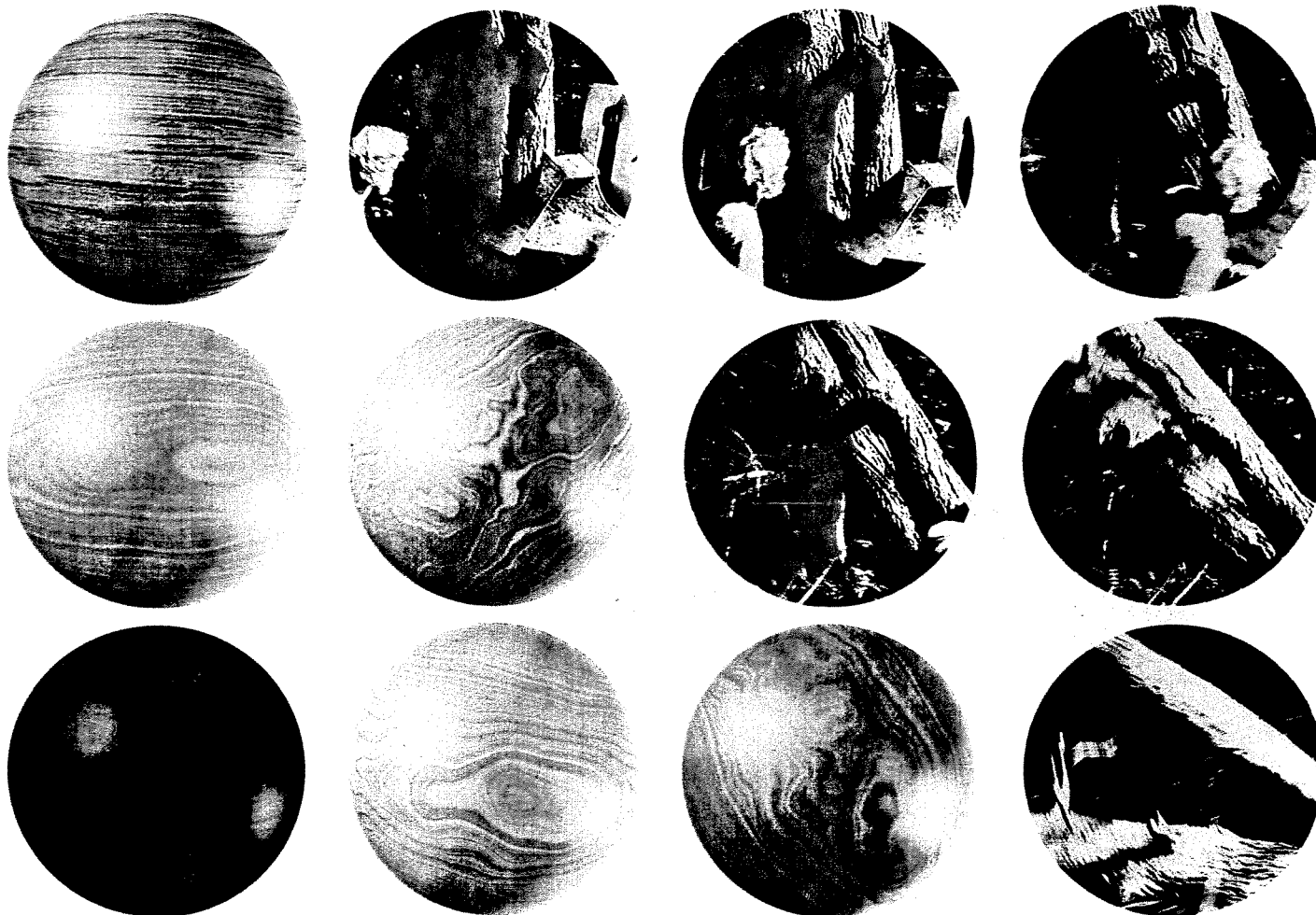


J O U R N A L O F
FORESTRY

November 1993

Volume 91, Number 11



Forest Products Research

The Future Is Now

The forest products industry plays a major role in shaping forest management practices in the United States, in its dual capacity as land manager and timber buyer. The industry presence is felt, directly or indirectly, in the management of virtually the entire private commercial timberland base—which comprises 347 million acres or 72 percent of the US total (USDA Forest Service 1989). It is certainly a force to be reckoned with and to be directed into constructive avenues. Foresters must carefully consider how they can help the US forest industry practice and promote environmental excellence on all the natural resource areas affected by its pervasive operations.

The Business Context

The forest products industry accounts for 7 percent of the US gross domestic product. The pulp and paper industry is internationally competitive, and companies in the Southeast are among the lowest cost producers in the world. Not all companies own their own forestland, but those that do feel intense pressure to obtain cost-of-capital returns from their land.

Demand for wood products in the United States is expected to increase 40 percent by the year 2040 (Haynes and Adams 1992). Annual per-capita consumption in the US is already more than three times greater than the global average (World Resources Institute 1992); if this gap narrows even modestly, global demand for wood will rise dramatically.

Southern plantations are expected to produce 50 percent of the nation's fiber by the end of this decade (USDA Forest Service 1988), although some analysts question the ability of southern timberlands to meet demand (Adams and Haynes 1991). Inadequate regeneration on nonindustrial private forest (NIPF) land, and withdrawals of federal land from timber production in the West, support a view that demand will outstrip domestic production.

Demand for wood products is expected to increase 40 percent by the year 2040. However, the general public does not readily accept intensive timber management contiguous to high-use recreational areas, as shown above.



The Social Context

Industry operates within a context of social values and perceptions that can be at odds with business objectives. Three major social realities will influence the shape of industrial forestland management over the next decade.

Environmental awareness. Public interest in the environment reflects a wide range of individual predispositions, from passive curiosity to militant advocacy. US consumers will increasingly follow their counterparts in Europe in demanding to know where their products come from and how they are produced. They will want evidence that the raw materials for wood and paper products are derived from sustainable, environmentally sensitive forest practices. Some companies close to consumers, such as Procter & Gamble, are already experiencing this (pers. commun., G. Morris and J.D. Skovran, The Procter & Gamble Paper Products Co., Mehoopany, Pennsylvania, 1992). The "greening" of consumerism offers proactive forest products companies an opportunity to capitalize on the fact that trees are the most environmentally benign raw material for many consumer products—the forest resource is renewable; forest-derived products have lower energy costs than products made from competing materials (Koch 1992);

and wood products sequester carbon dioxide (Sampson 1992).

Land ownership. The distinction is blurring between private and public ownerships and between individual and industry ownerships. The public has strong feelings about the management and appearance of forest resources. Increasingly, the general public and some scientists recognize that many noneconomic dimensions of forested landscapes require management action across ownership boundaries. Thus pressures to modify forest management will almost certainly be applied without regard to ownership.

Industry credibility. The forest products industry has little credibility with the general public. Public and media attitudes toward industry range from mild cynicism to open hostility. To change this negative view will require a shift in corporate attitude and communications style—from guarded, self-serving hyperbole to a genuinely open, vulnerable model that sincerely seeks to serve the broader interests of society and the environment.

Facing the Issues

Some of the many consequences of this changing social context are reflected in a new roster of environmental issues. Industrial forestland managers face a myriad of environmental land-use issues



Managing Industrial Forestland In A Changing Society

By John A. Stanturf,
Stephen B. Jones,
and William D. Ticknor

today; three seem to pose the greatest immediate challenge.

Soil and water. Wetlands represent the greatest immediate practical concern for many. Concern began when the 1989 *Federal Delineation Manual* used a broad definition of wetlands. This definition created a class of wetlands that had previously been considered "occasionally saturated." A large portion of industrial land in the southern Coastal Plain was brought under regulation as jurisdictional wetlands under Section 404 of the Clean Water Act. Almost overnight, millions of acres of flatwoods became "waters of the United States." More threatening than the wider definition, however, have been individual case decisions by the Corps of Engineers and Environmental Protection Agency that undermine the exemption granted in Section 404 for "normal silvicultural practices" (Godbee 1992). The misperception is that bedding and minor drainage have caused wholesale conversions from hardwood wetlands to pine uplands.

Water quality and best management practices (BMP) are related to wetlands but extend to a larger area of management. With potential congressional reauthorization of the Clean Water Act and Coastal Zone Management Act, industry is concerned that federally mandated, na-

tional BMPs might replace the current system of voluntary state BMPs. For the most part voluntary BMPs work (Hook et al. 1991). Mandatory BMPs would put an unnecessary administrative burden on landowners and state agencies and would prevent the use of site-specific forestry. Monitoring and enforcing mandatory BMPs would impose additional financial and personnel costs on landowners without clear promise of public benefit by way of cleaner water.

Visual concerns. Whatever the arguments for and against clearcutting in other silvicultural systems, the practice is critical to intensive pine plantation forestry and to rehabilitation of high-graded hardwood stands. However, the negative public reaction, regardless of the technical merits of clearcutting, has caused significant reductions to its application in several regions.

Public opposition to clearcutting is not necessarily indicative of widespread opposition to timber harvesting per se. Results of a Pennsylvania survey (pers. commun., S. Jones and J. Finley, The Pennsylvania State University, University Park, 1992) show that while 59 percent of the general public and 57 percent of NIPF landowners opposed clearcutting, fully 70 percent and 78 percent, respectively, believed that harvesting can im-

prove forest health.

Local ordinances to regulate logging or other forestry practices are on the increase around the country. To date none of the ordinances in the Southeast are aimed at forest preservation (Hickman and Martus 1991), but those that regulate vegetation removal to control real estate development could have a spill-over effect on managed forestland.

Protecting nature. Protection of threatened and endangered (T&E) species in eastern forests has not affected forest management to the same degree that the northern spotted owl has in the Pacific Northwest. Nevertheless, the red-cockaded woodpecker, Red Hills salamander, and other T&E species are concerns for both industry and NIPF landowners. Greatly expanded listings of T&E species by state agencies, and increasing emphasis on adding private landowner guidelines to recovery plans, are likely to have greater impact on industry land. As T&E species protection moves from a focus on individual species to habitat protection, and as land managers emphasize "ecosystem management," it seems certain that more land will be managed for minimal timber production and outright preservation (Irwin and Wigley 1992).

Biodiversity has several operational definitions (McMinn 1991), but com-

WESTVACO'S BLUFF TRAIL, near Hendersonville, South Carolina, demonstrates natural resource stewardship and multiple-use management. The Bluff Trail is frequently used by large school groups (more than 1,600 people have visited the trail since its opening in 1992). During forestry field days, student groups rotate between stations that demonstrate multiple-use management, sense awareness, skill identification, snakes, and forest products.

The Edisto Trail, in the largely undeveloped Ashepoo, Combahee, and Edisto River Basin of South Carolina, meanders



Courtesy of Westvaco Corp.

through a beautiful lowcountry forest and past historical landmarks. The trail is on Westvaco land; a cooperative agreement with the state Department of Education promotes use of the trail for environmental education.

By retaining ownership of ecologically significant land and developing it for educational purposes, private companies can reap recurring public relations benefits. For example, a walk along Bluff Trail shows how multiple-use management practices ensure a renewable wood supply for Westvaco's mills while providing diverse wildlife habitat, protecting watersheds, and offering recreational opportunities and scenic beauty.

community diversity at the landscape level poses the greatest challenge to industrial forestland managers (O'Connell and Noss 1992). Industrial forests are a mosaic of multiple ages, sizes, and species—both hardwoods and softwoods. But most pine acres are artificially regenerated, and virtually all operable stands are intensively managed for fiber production, not biodiversity. Even-aged management and artificial regeneration are key elements of the South's status as a low-cost fiber-producing region. Any regulation that significantly limits application of these techniques will raise fiber costs.

Satisfying Societal Values

Industry has responded to these new environmental pressures with a range of programs. Some are philosophical and some are practical. For example, most industrial forestland owners have made a formal corporate commitment to high environmental standards. The American Paper Institute (API) developed environmental health and safety principles, including forest management standards (McMahon 1992); all major pulp and paper companies were API members and had to subscribe to these principles as a condition of membership. Since API was absorbed into the American Forest and Paper Association this year, these principles are in the process of being implemented in the new organization.

Industry has demonstrated its commitment to land stewardship by donating more than 1 million acres of environmentally sensitive land to nonprofit conservation groups (American Forest Council 1991). Much of this land has been transferred to public ownership. Industry also supports research on wetlands, water quality, wildlife, and forest health through the National Council of the Paper Industry for Air and Stream Improvement (NCASI) and directly with universities.

The operating procedures of most companies are at least as stringent as local BMP requirements, and it is typical industry practice to leave buffer strips along major highways and to set aside special natural and cultural areas (Taylor and Owen 1991, Wright 1991, Stanturf 1992). Beyond this near-term cooperation with the changing social context, most wood industry firms have developed long-range strategies to meet the anticipated consequences of the changing resource dynamic. The primary mecha-

nism for addressing changing values has been to raise productivity on industry land, and on forestland in general, to meet public needs on a smaller land base. Companies have responded with enhanced technologies for tree improvement and tissue culture; precise matching of species and seed source with site requirements; fertilization; herbaceous weed control; and prescriptive site preparation.

While these technologies have been eminently successful in meeting economic criteria, they contain the seeds of future public concern. Tree improvement is rapidly incorporating biotechnology techniques—beginning with tissue culture and perhaps culminating in "transgenic" trees (Zobel 1992). Clonal forestry, if practiced without appropriate discipline, may result in a loss of genetic diversity. If the experience of agriculture is any guide, genetically altered organisms could engender public apprehension.

Intensified management will continue; but unless classical economic approaches to decisionmaking are modified, this could result in further reduction of rotation lengths, more complete control of competing ground vegetation, and modification of soil characteristics (e.g., subsoiling, addition of organic supplements such as pulpmill sludge).

Some companies expect yields of 10–15 tons per acre annually compared to the current average of 6 tons on good sites (Wallinger 1992). Traditional economic pressures could drive rotation lengths down to 10–15 years. These shifts, combined with better use and conversion at manufacturing plants and increased use of recycled fiber, will give new life to an old industry dilemma: how much company land is enough? Two responses are possible: reducing the land base or increasing the percentage of fiber needs met from company land. Whichever choice is made, change and new challenges lie ahead.

The Next Steps

Industry responses to mounting pressure for socially and environmentally sensitive resource management fall into three categories. First, appropriate responses are made to current or likely regulations. Examples include compliance with wetlands regulations and voluntary BMPs, and the incorporation of greater percentages of recycled fiber in paper products. Second, industry has taken actions that have a posi-

tive economic return or that reduce costs, such as technologies to enhance land productivity and some land donation programs. And third, companies voluntarily meet social preferences through actions that are economically neutral or even involve a net cost. A typical situation would be retaining ownership and preserving land with high ecological value rather than donating the land, which would provide a tax credit and avoid management costs.

Initiatives in each of these categories have greatly benefited both industry and society. However, there are major opportunities for further progress, especially in the areas of economics and altruism. One would be extension of rotation lengths. As Ticknor (1992) pointed out, once a plantation forest is in a "steady state" (with approximately equal areas of mature stands being harvested and planted annually), economic, esthetic, and biodiversity considerations may tilt the harvest scheduling decision toward longer rotations. Further, not all industry land should be intensively managed. A tendency to "put every acre in production" is encouraged by treating landownership as a sunk cost and ignoring recurring costs such as taxes. Improved land classification and financial analysis can identify areas of low site quality that do not respond sufficiently to justify intensive treatment. Recognition of noncommodity values, as well as the true cost of marginally productive areas, will persuade sensitive managers to prescribe less intensive treatments.

In addition, industry can invite the public to participate in decision processes on industry lands. This rather intimidating prospect is not intended to dilute management's prerogatives, but rather to let the public share in decisions that, from a managerial view, have several equally acceptable options. Perhaps few actions will do more to establish industry credibility than this step. The public expects to be included in land management decisions, even on private land. The current system of protecting

John Stantur



Intensively managed pine flatwoods in Georgia are planted after site preparation, which includes bedding on wetter sites. Highly intensive management on suitable acres is a corollary to low-intensity management of other areas.

public interest on private land—by relying on broad national regulations and piecemeal expansion of agency jurisdiction—is inefficient and frequently unfair. And it cannot result in good, site-specific silviculture.

Socially based philanthropic programs, which are supported by virtually every company in the industry, can be extended into the resource area. In concept, there is little distinction between funding public works and dedicating land for an environmental service or public program. Ticknor (1990) noted the paradox that many firms spend millions to provide an esthetically pleasing workplace—but balk at implementing resource programs with a similar esthetic content and purpose.

National Self-Sufficiency

We need a national policy for private forest management (Funderburke 1992) that includes a commitment to achieve fiber self-sufficiency in the United States.

Otherwise we will simply export our environmental problems overseas (Bowyer 1992), along with our industry. Self-sufficiency can be achieved by making a commitment to four actions:

- integrate the social and environmental initiatives discussed above into traditional industry forest management programs;
- convince society that highly intensive management on suitable acres is a corollary to low-intensity management of other areas;
- ensure that NIPF land is brought under professional management; and
- reforest large areas of understocked forests and marginal farmland to offset appropriate environmental set-asides and public land withdrawals.

This prescription is not intended to sell "business as usual" to the American public, but neither does it abrogate private property rights. Rather, it is a call to the forest industry to be proactive in the policy arena, to take a leadership role that involves some rather modest risks. The payoff could be the continuation of the United States forest products industry as a world leader in quality products at competitive prices from environmentally sound forest management. **JOF**

Literature Cited

- ADAMS, D.M., and R.W. HAYNES. 1991. Softwood timber supply and the future of the southern forest economy. *South. J. Appl. For.* 15(1):31–37.
- AMERICAN FOREST COUNCIL. 1991. Facts and figures. Am. For. Council, Washington, DC.
- BOWYER, J.L. 1992. Realistic thinking and the North American approach to environmental issues: a dichotomy. *For. Prod. J.* 42(10):18–24.
- FUNDERBURKE, K.P., JR. 1992. Toward a national forest policy, will industry take the lead? *J. For.* 90(10):20–22.
- GODBEE, J.F. 1992. Forest management in wetlands. Unpubl. pap. presented at the 7th Biennial Southern Silvicultural Research Conference, Mobile, AL.
- HAYNES, R.W., and D. M. ADAMS. 1992. The timber situation in the United States. *J. For.* 90(5):38–43.
- HICKMAN, C.A., and C.E. MARTUS. 1991. Local regulation of private forestry in the eastern

- United States. *In* Environmental concerns, government regulations, new technology and their impact on southern forestry, S.J. Chang, comp., p. 73–87. La. Agric. Exp. Stn., Baton Rouge.
- HOOKE, D., W. MCKEE, T. WILLIAMS, B. BAKER, L. LUNDQUIST, R. MARTIN, and J. MILLS. 1991. A survey of voluntary compliance of forestry BMPs in South Carolina. SC For. Comm., Columbia.
- IRWIN, L.L., and T.B. WIGLEY. 1992. Conservation of endangered species, the impact on private land. *J. For.* 90(8):27–30, 42.
- KOCH, P. 1992. Wood versus nonwood materials in US residential construction: some energy-related global implications. *For. Prod. J.* 42(5):31–42.
- MCMAHON, J.P. 1992. Forest industry's commitment to the public: environmental, health, and safety principles. *J. For.* 90(10):38–40.
- MCINN, J.W. 1991. Biological diversity research: an analysis. USDA For. Serv. Gen. Tech. Rep. SE-71.
- O'CONNELL, M.A., and R.F. NOSS. 1992. Private land management for biodiversity conservation. *Environ. Manage.* 16(4):435–50.
- SAMPSON, R.N. 1992. Forestry opportunities in the United States to mitigate the effects of global warming. *Water, Air, & Soil Pollut.* 64:157–80.
- STANTURF, J.A. 1992. Managing industrial forest lands in the face of changing social values: the Union Camp experience. *In* American forestry: an evolving tradition; proceedings, Society of American Foresters national convention, p. 358–63. Soc. Am. For., Bethesda, MD.
- TAYLOR, D., and C. OWEN. 1991. Balancing economics and the environment, stewardship, and the forest products industry. *J. For.* 89(11):13–16.
- TICKNOR, W.D. 1990. Practicing objective forestry in a subjective world. Unpubl. pap. presented at the American Forest Council Future of Forestry Conference, October 16, Washington, DC.
- . 1992. Forestry for a changing nation: commodities and sustained productivity. *In* American forestry: an evolving tradition; proceedings, SAF national convention, p. 41–46. Soc. Am. For., Bethesda, MD.
- USDA FOREST SERVICE. 1988. The South's fourth forest: alternatives for the future. USDA For. Serv. For. Resour. Rep. 74.
- . 1989. Forest statistics of the United States. USDA For. Serv. For. Resour. Bull. PNW-RB-168.
- WALLINGER, R.S. 1992. Private sector forestry leadership in a changing nation: an industry viewpoint. *In* American forestry: an evolving tradition; proceedings, Society of American Foresters national convention, p. 47–53. Soc. Am. For., Bethesda, MD.
- WORLD RESOURCES INSTITUTE. 1992. World resources, 1992–93. Oxford Univ. Press, New York.
- WRIGHT, R.T. 1991. Adaptation in industrial forest management. Unpubl. pap. presented at the Conference on Ecosystem Management in a Dynamic Society. Purdue Univ., West Lafayette, IN.
- ZOBEL, B. 1992. Vegetative propagation in production forestry. *J. For.* 90(4):29–33.

ABOUT THE AUTHORS

John A. Stanturf is principal soil scientist, USDA Forest Service, Southern Hardwoods Laboratory, PO Box 227, Stoneville, MS 38776; Stephen B. Jones is associate professor, The Pennsylvania State University, University Park; and William D. Ticknor is president, W.D. Ticknor Forestry Consultants, Orient, OH. Stanturf and Jones were previously with Union Camp Corporation; Ticknor was formerly with Mead Corporation.